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wherein the test sample is selected from the group consisting of blood, ocular lens fluid, cerebral spinal fluid, milk, ascites fluid, synovial fluid, peritoneal fluid, amniotic fluid, tissue, fermentation broth, and cell culture.

REMARKS

I. DISCUSSION OF THE CLAIM AMENDMENTS

Claim 1 has been amended to recite that the nucleic acids bond with the metal oxide support without prior purification of the nucleic acid. The specification at page 4, lines 13-19, explains that the sample can be used as is or with pre-treatment. The invention of claim 1, as pending, states that one of these pre-treatment steps (*i.e.*, "purifying nucleic acids") is not performed. Thus, this limitation is fully supported by the specification.

Claim 1 has also been amended to recite that the nucleic acids bond with the metal oxide support without precipitation. The specification distinguishes the claimed invention from the prior art. For example, the specification (at page 1, lines 13-17) recites that prior art methods used organic solvents to precipitate nucleic acids. Thus, this limitation is fully supported by the specification.

Claim 1 has also been amended to recite that the test sample is selected from the group consisting of blood, ocular lens fluid, cerebral spinal fluid, milk, ascites fluid, synovial fluid, peritoneal fluid, amniotic fluid, tissue, fermentation broth, and cell culture. The recited test samples are supported in the specification, for example, at page 4, lines 8-12. Thus, this limitation is fully supported by the specification.

For the reasons discussed above, no new matter has been added by way of the present Amendment.

II. DISCUSSION OF THE OBVIOUSNESS REJECTION

A. Review of the Office Action's Evaluation of the Cited References Taken Alone

Claims 1, 2, and 4-16 stand rejected because the Office Action alleges that the claimed invention would have been obvious at the time of invention as evidenced by Uematsu et al. (EP 757 106) in view of Kim et al. (WO 92/18514) and Chomzynski (USP 5,945,515). Specifically, the Office Action alleges that Uematsu discloses each element of the claimed invention except for

1) immobilizing the nucleic acid by forming a bond between the nucleic acid and the metal oxide support, and

2) a binding buffer having a flashpoint greater than 130 degrees Fahrenheit or the use of a reducing agent.

The Office Action alleges that Kim helps to cure the deficiencies of Uematsu by disclosing the purification of nucleic acids using metal oxide supports.

The Office Action also alleges that Chomczynski helps to cure the deficiencies of Uematsu et al. by disclosing a binding buffer within the scope of the claim.

Thus, the Office Action does not allege that any prior art of record taken alone discloses the claimed invention.

B. Discussion of the combination of Uematsu and Kim

The Office Action alleges that it would have been obvious to combine the cited references in order to arrive at the claimed invention. Specifically, the Office Action alleges that the ordinarily skilled artisan would have been motivated to modify the method of Uematsu by using the metal oxide support of Kim to achieve a more versatile, cost-effective and more efficient means of separation. To support this motivation, the Office Action points primarily to page 3, lines 31-35, which state that the invention disclosed by Kim provides an optimal combination of versatility, cost, speed, simplicity, and ease of use.

Applicants respectfully traverse the rejection.

1. No motivation to combine

First, the Office Action cites to page 3, lines 31-35 of Kim as providing a motivation to the ordinarily skilled artisan to combine Kim with Uematsu. Applicants have examined Kim, and the cited passage in particular and respectfully submit that the cited paragraph of Kim is no more than unsupported "puffery." That is, Kim baldly states that the disclosed method is the best (i.e., optimal) but provides no comparisons or supporting data. Even the least discriminating artisan, let alone the hypothetical "ordinarily skilled artisan" would view the cited passage in Kim as an unpersuasive and unsupported self-laudatory evaluation, and having read it would not be motivated to modify other art.

Second, the ordinarily skilled artisan would readily recognize that the Kim reference was published well before the Uematsu reference. Therefore, even if the Kim reference disclosed optimal methods in 1992, there is no reasonable basis to conclude either i) that Uematsu's methods were not improved over Kim's and therefore "more optimal", and ii) that Uematsu would have been unaware of Kim or the like, considered use of any portion of Kim, and choose the methods disclosed in Uematsu in preference to those disclosed in Kim.

For the preceding two reasons, there is no motivation of record to support the combination of Kim with Uematsu in the manner proposed by the Office Action.

2. Disclosure in Kim contrary to combination

Kim also provides a motivation not to combine Kim with Uematsu so as to arrive at the claimed invention.

Claim 1 as pending states that the sample is not purified nucleic acid, but a relatively more complex sample (selected from the Markush group) containing unpurified nucleic acid. Additionally, claim 1 as pending excludes methods involving precipitation.

In most examples within Kim, the starting material is purified nucleic acid. These examples are excluded from the scope of claim 1. However, Examples 7, 8, and 10 all are directed to the isolation of nucleic acids from non-purified test samples. In each working example, Kim directs the skilled artisan to precipitate the nucleic acid with a high concentration of isopropanol prior to binding to the metal oxide support. Thus, in each given Example involving the isolation of non-prepurified nucleic acids, Kim teaches the prior use of precipitation which is not within the scope of the claimed invention.

3. Even Assuming Kim and Uematsu would have been combined, the ordinarily skilled artisan would not have combined these references in such a way so as to arrive at the claimed invention.

Even assuming the combination of Kim and Uematsu is proper, the combination of these references does not lead to the claimed invention. Kim discloses the use of metal oxide supports, but when non-purified sample sources are used Kim teaches the use of significant pre-purification steps *including* precipitation. Accordingly, if the ordinarily skilled artisan were to disregard the novel feature of Uematsu (*i.e.*, the improved silicon coated resin) and replace it with the metal oxide material of Kim, then this artisan would also be motivated to use the methods of Kim with that material which include precipitation if the nucleic acid is not pre-purified. In distinct contrast, the only way to arrive at the invention of pending claim 1, is to use applicants own disclosure to pick and choose the elements out of each reference. Of course, such a hindsight analysis of the prior art is not permissible.

Request For Interview

Applicants respectfully submit that the application is in condition for allowance. In the event the Examiner disagrees, applicants respectfully request an interview, and ask that the Examiner contact applicants' undersigned representative prior to taking any further negative action.

Respectfully submitted,
G. Gundling

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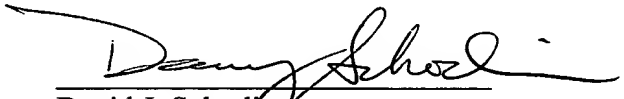

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Application No.: 09/470,944

Filed: December 22, 1999

Title: NUCLEIC ACID ISOLATION METHOD AND KIT

Case No.: 6653.US.01

Group Art No.: 1637

Examiner: A. Spiegler

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Assistant Commissioner for Patents Washington, D.C. 20231, on:

Date of Deposit: November 26, 2002

Matthew H. Mader Date

Commissioner for Patents
Washington, D.C. 20231

VERSION WITH MARKINGS TO SHOW CHANGES

Dear Sir:

In support of the response to the Office Action dated September 28, 2001, applicants herein provide a copy of the amended claims, which are marked up to show the differences between the pending claims and the previously pending claims.

1. (Four Times Amended) A method for separating nucleic acid from a test sample comprising:

a) contacting a test sample with a metal oxide support material and a binding buffer such that the nucleic acid bonds with the metal oxide support material without prior purification or precipitation of the nucleic acid, wherein the binding buffer comprises

a chaotropic agent and

a detergent

and the flashpoint of the binding buffer is greater than 130 degrees Fahrenheit;

b) separating the complexes from the test sample; and

c) eluting the nucleic acid from the metal oxide support material, thereby separating the nucleic acid from the test sample,

wherein the test sample is selected from the group consisting of blood, ocular lens fluid, cerebral spinal fluid, milk, ascites fluid, synovial fluid, peritoneal fluid, amniotic fluid, tissue, fermentation broth, and cell culture.

Respectfully submitted,
G. Gundling

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